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ABSTRACT

The Roger Tory Peterson Institute is concerned with creating experiences in which children face the mysteries and wonders of the natural world and understand their connection with nature. The purpose of the forum was to support the growth of these experiences and the people who create them. The forum covered three broad topics: (1) visions for the relationship between children and nature; (2) barriers to attaining those visions; and (3) specific strategies for overcoming the barriers. This document contains summaries of the three sessions; proposals for change; creative ideas culled from small group sessions; and lists of officers, trustees, staff, speakers, committee members, and participants. (CW)

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BREAKING THE BARRIERS: Linking Children and Nature

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Breaking the Barriers:
Linking Children and Nature

Report Of The 1988 Forum
Sponsored By

The ROGER TORY PETERSON INSTITUTE
of Natural History

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OUR COMMITMENT

Confirmed and strengthened by the forum

Jeffrey B. Froke
President

Roger Tory Peterson
Honorary Chairman

As the new president of the Roger Tory Peterson Institute, it was a pleasure for me to host the forum, **Breaking the Barriers: Linking Children and Nature.**

The results of the forum have affected the development of the Institute's program in a profound manner. The meeting affirmed my own convictions and the advice of my mentor, Dr. Peterson, that we would focus on understanding and guiding the emotional connections of young children to nature as a necessary precursor to educating environmentalists.

The mission and programs of the Institute are indeed illuminated by the career and philosophy of Roger Tory Peterson who has stated,

"The philosophy that I have worked under most of my life is that the serious study of natural history is an activity which has far-reaching effects in every aspect of a person's life. It ultimately makes people protective of the environment in a very committed way. It is my opinion that the study of natural history should be the primary avenue for creating environmentalists..."

New Institute programs focus squarely on investigating and promoting the emotional and intellectual linkages of people, and especially young children (ages 4 through 10), to nature in a manner that will nurture lifelong curiosity, passion, and caring for wild places and wild things.

*"**We will teach the teachers .**"*

The Institute is committed to the pre-service and professional in-service nature education of teachers and naturalists. We will encourage greater family and community involvement in nature study for young children, and serve to improve communication among nature study professionals and centers concerned with the outdoor education of teachers, parents and young children.

The forum was an inspiring and telling event for the Institute. I am grateful to all participants who shared their ideas and advice with me. These have been germane to setting the course of the Institute's current and future success.

Jeffrey B. Froke
President

THE "FLASH OF GOLD"

A world of natural wonder awaits our children

Roger Tory Peterson--his life's work began at age 11 when, he says, "The natural world became my *real* world."

"What should be the relationship between children and nature?"

"How do you envision this relationship in an ideal world?"

"What are our goals for the future?"

These questions opened the forum **Breaking the Barriers: Linking Children and Nature** sponsored by the Roger Tory Peterson Institute in October 1988 in support of its overall mission:

"To inform society about the natural world through the study and teaching of natural history."

Roger Tory Peterson, the world-renowned artist, writer and educator who transformed watching birds from the academic pursuit of a few to the avocation of millions, is fond of recalling the two life-changing events of his childhood. When he was 11 years old, he touched what he thought was a dead bird on the side of a tree, and a flicker exploded in a flash of gold, setting a spark in his heart and mind that burns to this day. Then, quite fatefully, his seventh grade teacher, Miss Blanche Hornbeck, started a Junior Audubon Club, and recruited young Roger to its front ranks.

The Roger Tory Peterson Institute is concerned about creating experiences in which children face the mysteries and wonder of the natural world and understand their connection with it. The purpose of this two-day forum was to support the growth of these experiences and the people who create them, and it represented a first step by the Institute to create an on-going dialogue about the relationship between children and nature.

The 90 forum participants, all leaders in natural history and environmental education, came from Alaska, Florida, Maine, California, Ontario, British Columbia and points in between. They included teachers, administrators, college faculty, writers, and nature center staff. Some were representatives of national organizations such as the National Audubon Society, the National Wildlife Federation, the American Nature Study Society, and the Boy Scouts of America. Ninety-five percent of the participants work directly with children.

Structured to take maximum advantage of the experience and expertise of the participants through an interactive format of speakers and small group discussion, the forum covered three broad topics: VISIONS for the the relationship between children and nature, BARRIERS to attaining those visions, and specific STRATEGIES for overcoming the barriers. Preceding each group work session, national leaders shared their views on the topics of visions, barriers, and strategies.

OUR VISION

To nurture a passionate and caring generation

The first session of the forum focused on participants' goals for linking children and nature by addressing the questions,

"What should be the relationship between children and nature?"

"How do you envision this relationship in an ideal world?"

What are our goals for the future?"

Through plenary presentations, Dr. Willard Jacobson, Professor of Natural Sciences and former Chair of Science Education at Columbia University, and John Ripley Forbes, founder and Chairman of the Board of the Natural Science for Youth Foundation, sent a challenge to the participants: "What are your visions for linking children and nature?"

There are more than 5 billion *Homo sapiens* now inhabiting our planet home. The children in your classrooms will probably live in a world in which there will be twice as many people as there are today. For most of the times of humans on Earth, the population grew very slowly, possibly doubling every 1,000 years. A major reason was that, in generations past, most children would die early in life before they reached the age of reproduction. Now, the human population doubles about every 40 years.

Our hope is that our children will begin to recognize the stake that we have in maintaining a diversity of organisms that co-inhabit the habitats in which we live. We must share resources with all the other organisms living in our biosphere. We must also share resources with other human beings.

It is possible to walk through a forest or across a flat field and not see anything. It is possible to be out in the night and not see the constellations of stars, the bright planets, or the configurations on the full moon as it rises in the east. The child in the city may walk the concrete sidewalks and see little. And we may decry the barren environment in which our child of the city lives. But, even here there are exciting possibilities for those who *see*.

Can we teach curiosity? Maybe! It may be difficult to stimulate curiosity, but children are better endowed with native curiosity than those of us who are older. When children are curious, something precious is occurring. Nourish it!

Willard Jacobson

"What we really want people to do in our society is to anticipate the consequences of their decisions before taking action."

William F. Hammond

There was much sharing of information and an atmosphere of getting down to hard work as participants convened in their nine small groups. The facilitated groups were diverse, highly interactive, and sometimes argumentative as ideas emerged, were discussed, and evolved with input from many viewpoints. These groups stayed together throughout the forum, providing continuity as ideas were explored, strategies formed, and informal personal relationships fostered.

When participants reconvened following their small group sessions, it was clear that a vision of a world for children was shared among them. Collectively, five broad views of a profoundly different world emerged from the dialogue.

The most important thing that we as naturalists and teachers and educators can do is to strengthen an ailing education situation and an ailing nature center picture. The strongest answer to some of the problems we face today is making the nature center as important as the church and as the school. Every community should have one.

A nature center has to be run like a business. You can't be afraid to ask people for money. You've got to handle a nature center with computers, with business practices.

Those of you who do not work with teenagers are missing a fabulous opportunity. These kids can really do things, and many of them, I am happy to say, go on to become future nature center directors, excellent teachers and naturalists.

We are looking for dedicated people, people who want to make a difference. I wish we could have more nature center educators and directors who cared about kids. The thing that thrills me about the nature center field is that I believe strongly in kids. Kids are wonderful! I maintain that if you can give almost any normal kid a wholesome environment, he will get turned on to the kinds of things we do. But *you've* got to do it, *you've* got to be the leader.

One of the things needed more than anything in the nature center field is enthusiasm. Have enthusiasm, and don't be deterred by minor problems.

John Ripley Forbes

WE ENVISION A WORLD

. . . in which children bond physically, emotionally and mentally with nature.

To have a relationship with nature, young children must have meaningful personal experiences with natural elements and other species. These interactions should evoke a sense of wonder, magic, and connection with the world, as well as a feeling of kinship and interrelation with other beings. The intensity of the relationship, physically, emotionally, and mentally, is the foundation for caring for the world and the basis for responsible action.

. . . in which children learn and understand the interdependence of life

It is critical that these experiences also build knowledge and skills for interaction with the natural world. Ideally, children should comprehend how human beings are dependent on other life forms. It is this knowledge which leads to an understanding of why we must live in harmony with nature, from a pragmatic and ethical perspective. A knowledge of ecological principles, ecosystem concepts, and environmental ethics allows children to assess and examine their own values in order to make important decisions in their lives. To develop an ecological world view, education needs to be more interdisciplinary, acknowledging the diversity and interrelationships inherent in knowledge and in life itself.

. . . where children are given hope and confidence, and where they are empowered with responsibility and reverence for the well-being of our world.

Parents need to take a primary role in fostering the self-esteem and confidence of their children. In addition to offering knowledge, educators must find ways to give children the chance to articulate and be challenged by their feelings, attitudes, and world views. By engaging children in local projects, educators create opportunities for them to understand the dynamics of power and action, and, we hope, provide them with a global vision. Children will be empowered to take constructive action if they understand the impact of local actions and perceive which actions may be detrimental to the environment and to society.

. . . in which children enjoy discovery and learning.

Linking children and nature through education can only happen if learning is fun and meaningful! In addition to possessing a cognitive understanding, children need to know nature through all of their senses. They need experiences which instill an eagerness to be life-long learners, problem solvers, and activists.

. . . in which political and educational institutions support an ecological view of the world.

Political systems need to recognize that a healthy ecological system is a prerequisite for a healthy economic system. By restructuring schools towards "holistic" thinking across boundaries, interdisciplinary education will allow people to become environmentally literate.

To have a lasting and meaningful relationship with nature, children must spend more time outdoors. They need stimulation from a variety of natural habitats. Children from cities, suburbs and rural areas need ready access to natural settings where they can explore and experience other life forms. Young people should not have to "go there" to experience non-human aspects of the world. As positive nature experiences are reinforced by community groups, the media, teachers and other adults, opportunities for direct involvement with nature will expand for children. This, literally, will remove the barriers between children and nature.

BARRIERS OR CHALLENGES?

Our commitment and enthusiasm are vital

"What are the barriers to achieving our goals?"

"What conditions -- political, economic, attitudinal, imaginal, environmental -- stand in our way?"

The second session of the forum focused on barriers to achieving the goals expressed in the first round on visions.

Miriam Westervelt, Coordinator of Project Wild and Natural Resources Management of the U.S. Fish and Wildlife Service, and Judy Braus, Director of School Programs for the National Wildlife Federation, outlined key issues they see as barriers to linking children and nature.

Based on my research, it looks like the problems we face as educators are not insurmountable. The research gives us a clearer understanding of what the problems are and ways we can surmount them.

The first challenge is to develop teaching strategies that deal with the fact that kids relate to the natural world very differently, depending on how old they are, their gender, and where they live. The effectiveness of our education programs may have to do with how well we have accommodated for those differences.

The second challenge has not to do with differences in the way kids relate to wildlife, but with a commonality that we found. Most children relate to wildlife in very anthropomorphic ways. We call that the humanistic attitude. The success of our efforts, particularly with very young children, may have to do with the extent to which we are willing to appeal to this humanistic side. The caution is that, once we have their attention, the process has to move beyond that affection toward more ecological understandings. Otherwise, the learning process can get stuck in a humanistic mode as it has with most adults in this country.

The third challenge has to do with expanding urbanization and the effects it has on the way kids relate to wildlife. The results of our research survey indicate that this rapidly expanding group of urban kids needs serious focus. Why? Because by virtue of its size, it will be the urban electorate, educated in urban areas, that will determine the future of wildlife.

Let's talk about another challenge. The young girls reached by the survey had the highest humanistic scores, the lowest levels of interest in wildlife, they were more fearful of wildlife than the boys, and they scored lower than boys on every knowledge question we asked. So the challenge is to teach them to be more like boys, right? I suggest that it isn't. We need to resist the inclination to regard girls as having less motivation to become wildlife oriented, just because they appear to be less hungry for facts. Conceptual understandings are also important, and young girls may have a natural bias toward understanding ecological relationships and our kinship with all life.

Regardless of all the data we collect, there is really only one key ingredient for a successful natural history education program: passion. How successful we are in communicating that passion will depend on how much time we take to know our audience and how well we have been willing to accommodate for the differences in the educational needs that they have.

Miriam Westervelt

When I thought about barriers, I grouped them into three major sections. The first one I have called "snags in the system," which are barriers in the educational system itself. The second group is a change in life-styles, brought about by social and technological changes. The third deals with a lack of leadership at the top. These are barriers that result from a lack of local, state and federal mandates for implementing effective environmental education programs.

A real problem in education is a crammed curriculum. Teachers don't see how they can fit anything else in, and environmental education is on the back burner.

Another educational system barrier is a lack of teacher training, both at the pre-service and in-service levels.

A third barrier is the amount of science, natural history, and technological information that teachers have to sort through. Even teachers that are trained to teach science and environmental education often feel overwhelmed by the amount of material. With all this information, how does a teacher decide what is important?

Another barrier is "infusion confusion." Most schools do not integrate environmental education into the curriculum. We are asking the teachers to do the integrating for us, something that is tough to do.

I see two major problems related to the evaluation of environmental education. One involves school accountability, or the "teaching for the test" problem. The other has to do with how effective we are with our programs. We can say that we reach 30,000 teachers with our materials and programs, but what is the bottom line? What are kids really getting out of it?

I would like to address changing life-styles. The first problem I have outlined is increasing urbanization. Many kids just don't have an opportunity to get in touch with the out-of-doors, and many urban areas aren't naturally awe inspiring.

Yet another barrier is changing family life. Working parents and busy schedules mean there's not as much time for hikes, picnics and family vacations.

Yet another problem is changing values. There has been more emphasis on material goods, and there seems to be more parental emphasis on raising super-achievers. Not only is nature not valued in our society, but teaching and knowledge for the sake of knowledge are not valued.

Our growing addiction to technology presents a problem. High tech seems to have taken over our lives. Kids really are glued in front of TV screens, video screens and computer screens. How can technology be used to promote outdoor discovery?

Environmental education has not always taken cultural and ethnic diversity into account. How do we make environmental education relevant to all audiences, and what are the strategies to get minority leaders more involved?

The last barrier I want to address is that there is no leadership at the top, a lack of support for environmental education at the federal level. The lack of a national mandate has often hindered efforts at the state and local levels as well. Do we need a national mandate?

It is important to remember that, given a chance, kids really do connect to the natural world. We as environmental educators can harness their natural curiosity and enthusiasm and encourage outdoor experiences, which in turn will lead to the development of an environmental ethic and a commitment to action.

Judy Braus

Following these speakers, the small groups reconvened to outline the barriers which block their visions for the future. Their lists were similar in the assessment of where barriers lie: in the educational system, the teaching profession, our culture and society, the political systems, and in communication between organizations working to link children and nature.

Four sources of barriers emerged from the group work, each with specific conditions which stand in the way of linking children and nature.

WE ARE CHALLENGED BY . . .

our current educational system

Teachers and administrators give environmental education low priority in an educational structure that is fragmented, crowded, and overstressed. Resources such as good curricula materials and access to the outdoors are either non-existent or inaccessible. Nature is viewed as a *content* area, rather than as something relevant to every subject. Educators do not recognize the interdisciplinary character of "science" and prevent the infusion of environmental education into other curricula. Education today fosters a factual approach to learning rather than a problem-solving and conceptual approach. Passion and enthusiasm for learning are essential elements for children and teachers engaged in nature discoveries.

ill-prepared and overstressed teachers

Teachers are not adequately prepared to teach children about natural history. They lack proper training, exciting materials, personal experiences, networking opportunities, rewards, and incentives for teaching environmental education. Without preparation, teachers resist and fear teaching ecological principles. Pre-service and in-service environmental education training opportunities for teachers are crucial. There has been a failure to attract and keep people in the field of environmental education. Appropriate salaries, reduced stress and promotion opportunities are needed.

the social and political climate

Our cultural, social and political values have placed natural history low in priority and visibility in the national agenda. Many people feel separate from nature or dominant over nature, failing to perceive themselves as an integral part of the natural world. Passive attitudes underlie our failure to recognize that the responsibility lies with *us* to provide better experiences for teachers and children by enhancing and changing our current system. As proponents of a world view based in natural history, we have not been sophisticated in using the media or accessing leadership about the importance of re-linking people and nature. We have not nurtured new leadership to plan and think more comprehensively and to work toward our goals. Active leadership is lacking at the local, state and national levels.

the need for better communication among ourselves

There has been a lack of communication and networking among people working to link children and nature. We lack a clear mission for environmental education, and we do not have consensus about its scope and content. Without clear understanding and appreciation of the differences and similarities *within* the field, our diversity will not be presented to the outside world in a positive way. Collective efforts are needed to obtain and use power effectively to achieve our goals.

STRATEGIC PLANNING

The ultimate challenge

The final session of the forum focused on developing strategies to achieve the previously stated visions for linking children and nature.

"What strategies can we propose and develop to overcome the barriers and reach our goals?"

Marshal Case, Vice President for Education of the National Audubon Society, and Dean Steinhart, Director of Environmental Education for the Pennsylvania State Education Department, discussed directions educators can and should take to improve environmental education and children's relationships with nature.

When it comes to nature study, natural sciences, and environmental education, we are really dealing with a huge percentage of teachers who do not have any kind of background in the subject matter. It becomes *our* responsibility to do everything possible to make them comfortable with integrating this subject matter and to encourage them to make these topics exciting and fun, as well as a great learning opportunity for children.

We need to see how television and video materials can relate to the classroom teacher and students. We simply must make renewed efforts to get involved in this market, and to turn kids back to nature while maintaining our excellent outdoor programs through parks, nature centers and wildlife refuges. This gives us the opportunity to build the importance of natural history and the fact that there are a lot of exciting things to study outside of the home, the school building and the TV box.

It takes some time and effort to discover things in the natural world. It takes patience, it takes observation, and it often takes a good teacher to spark the interest of a child.

Which colleges and universities today are equipped to teach our teachers and leaders in nature study? What has happened to focused programs on environmental education? Who is teaching our future nature center directors, park personnel and others about nature study? Where is the program to keep an outstanding environmental education and nature study program alive and viable at academic institutions, so that our children might follow in our footsteps? Better yet, what are *we* going to do about it?

Marshal Case

The driving force for environmental education in Pennsylvania is the Master Plan written in 1984. This ambitious and comprehensive document outlines strategies to direct the focus of our efforts at the state level. A key ingredient of the Master Plan is to establish networks, with the Office of Environmental Education at the center. From this structure many interagency activities have become established. A special committee exists that meets regularly to exchange ideas, outline new programs and seek cooperation in publishing new material for the field. All of Pennsylvania's agencies, public or private, with an interest in conservation, are part of this committee.

Several strategies are currently in place in Pennsylvania, and I will outline them for you.

We strive to identify exemplary environmental education programs, and we maintain a data base of quality outdoor education programs.

An "envirothon" for high school students is run each year as competition in five areas: wildlife, forestry, aquatics, soil, and a current issue such as acid deposition.

Each summer, conservation schools are sponsored. Summer curriculum conferences stress school site development.

We utilize graduate schools to obtain hard data on environmental education.

Each year a special topic is addressed for environmental education week throughout schools in the Commonwealth.

In-service and pre-service (college seniors) teacher training is provided.

Inner city nature programs based on Project Learning Tree and reaching thousands of children are offered in Philadelphia.

Penn Link, an electronic mail system, is used for communications across the state of Pennsylvania.

The state system of higher education is looking at requiring environmental literacy for all students.

These strategies and more are in place in Pennsylvania, and they are working. We have a long way to go, and we will continue to monitor schools in the Commonwealth.

Dean Steinhart

Following these presentations, the groups reconvened to develop strategies to overcome barriers and realize their visions. This was the ultimate challenge to the participants. Each brought knowledge of issues related to children and nature; each had both positive and negative experiences in ways to link them; and each had devoted energy to finding new ways to bring children and nature together. This session was an opportunity to take all those person-years of work and thought, and to bring forward a series of strategies to achieve the visions of a different and more interconnected world.

Proposals were developed which detailed the purpose, resources, responsibilities, and action plans for specific strategies. Several of the groups' strategies were similar, reflecting consensus about what needs to be done and what resources can be engaged. They can be summarized into the six major points that follow.

WE PROPOSE THESE STRATEGIES

Understand and change the dominant world view which disassociates people from nature

Our dominant world view perceives humankind as *separate* from nature, rather than *part of it*. We must develop a better understanding of our connection with the natural world. In doing so, we will cultivate new attitudes and build a fresh, integrated global perspective. This can be done by providing opportunities for children and adults to discover the natural world around them. We should use children's curiosity, and apply existing curricula and media in new ways at the earliest possible age. By stimulating educators both to reflect on our current world view and to find their own place in nature, their understanding will grow. We can create incentives and rewards for thinking and acting in a more caring and holistic way.

Our resources include experts in nature education who can teach us successful ways of providing children with experiences in the natural environment. Conferences, retreats and vision quests, workshops on curricula development, and networks can help educators better understand the contradiction between the existing world view and our place in nature. Neighborhood and grassroots organizations and television may all be important in helping to educate people about the diversity *and* interconnectedness that exists within our species and within the larger ecosystem.

Create networks and an umbrella organization to facilitate communication among our diverse programs

Many groups have developed successful solutions and strategies for linking children and nature. Unfortunately, the public-at-large, educators, and even our participants are unaware of many of these strategies. In fact, many of us who work in the field of natural history and environmental education are not even aware of each other, with the result that we are wasting valuable time and energy "re-inventing the wheel."

We need an existing institution of national prominence and credibility, which is perceived as non-competitive and non-threatening, to be an umbrella organization. This organization can then bring to the forefront already existing environmental education programs which have been successful on a local, regional, national or international level. The Roger Tory Peterson Institute has been suggested to take over this role. The groups included "under the umbrella" might be environmental education groups, grassroots organizations/citizen groups, schools and universities, professional societies and networks, and nature centers.

Develop and work for a collaborative political agenda

Our public vision does not have a strong environmental ethic. The public vision can be altered through a political agenda which emphasizes environmental concerns. To do so we must use existing structures, situations, and strategies differently from the ways we do now.

We can use our existing political structures as an effective means to influence political leadership and put the environment back on the national agenda. This can be achieved through environmental leadership conferences, candidate forums, political lobbying and by electing leaders with shared values.

With the environment as a political priority, we can actively work for economic development that combines sustainable growth and ecological principles. We can start by using the current environmental crisis as an *opportunity* to educate the public and foster change. Local, state, and national governments and private industry can work together (1) to create legislation that reduces waste, produces smaller cars, promotes reforestation, more green space, and energy conservation; *and* (2) to establish mandates that put environmental education into school curricula.

Engage in creative planning and environmental design

Much of the public does not have physical access to a healthy natural environment. The ways we landscape, develop and redevelop land limit our passageway to natural areas. Being prohibited from experiencing nature fosters a poor understanding,

alienation, and fear of the natural world. We must therefore set up better and more creative planning and zoning practices that will allow *everyone* to have easy access to natural areas.

Special task groups of professionals and concerned citizens can develop zoning and planning guidelines to create more open space in the master plans of cities and suburbs that give equal priority to the "green structure." These groups can also advise city planning departments about new ways of using non-traditional land resources such as vacant lots, roof-tops, and managed plots of ground, to provide city dwellers with a multitude of very accessible natural areas. Municipalities can then sponsor events to "celebrate nature" in these new areas to help city and suburban people enjoy and learn about the diversity and wonders of the natural world.

Develop an educational agenda that integrates natural history throughout the educational experience

We must influence our educational system to recognize the importance of environmental education and to integrate natural history throughout the educational experience. As the initial step, we must use national and state bodies to lobby for a mandate to incorporate environmental education into all school curricula. We must then support that mandate by developing integrated, holistic, experientially-based school curricula. To follow through, we will acknowledge and disseminate the exemplary programs.

We will form better ties between formal school and other natural history programs such as those at nature centers and in Scouting. We can use local nature "experts" (found in nature centers, retirees, youth leaders, service organizations) to help teachers in the classroom and in leading children outdoors. Special groups of nature experts could also be created for this purpose. In addition, we must create more accessible natural areas for children through new zoning and planning.

Improve teacher training and teacher support

We must provide much better pre-service teacher training and sufficient in-service support and continuing education opportunities for teachers. We will first lobby for a mandate that makes instruction in ecology and the environment mandatory regarding teacher certification requirements for in-service environmental education. Pre-service training should require both formal classwork in ecology and environmental sciences and hands-on field experience. School boards should be responsible for employing community resources, such as nature centers, to provide nature experiences which instill motivation, confidence, and knowledge so that teachers, in turn, can provide such experiences for children. School boards should create incentives and rewards for teachers and students who do exemplary work in natural history education, such as time off for continuing education, sabbaticals and research opportunities.

We propose to form a group to (1) research and publicize exemplary environmental education programs and projects, such as Project Wild, Project Learning Tree, and CLASS; (2) establish a running data-base network of this information via ERIC or a similar service; and (3) periodically monitor and assess all education programs. The group in charge of this research should be a national or international agency, such as the Institute for Environmental Education, the Natural Science for Youth Foundation, the North American Association for Environmental Education, or the Roger Tory Peterson Institute.

IDEAS IDEAS IDEAS IDEAS

More creative strategies from the small group sessions

Improve teacher education

Pre-service and in-service teacher training must stress environmental education. Courses should be more thorough and degree programs should be offered in environmental education. Educate teachers to be proactive and aware of our place in the natural world, to promote change in a positive way. Environmental education should become a certification requirement both to help educators become more aware of environmental education and to improve educator skills and attitudes. Develop ongoing, effective in-service training and renewal for educators. Improve teacher training with creative pre-service and in-service programs; train teachers to use interdisciplinary curricula and help them feel comfortable with the outdoors.

Mandate environmental education

Environmental education curriculum development needs to be mandated at the local, state, and national levels. Political lobbying should focus on passage of this mandate.

Restructure science education

Restructure science education so it *integrates* school curricula to provide a holistic education. It is important to do this in a way that does not crowd the overall curriculum.

Develop an educational program

Develop an educational program that increases opportunities for *personal discovery* in the natural world. It would incorporate discovery opportunities within existing curricula and use existing or new tools in ways which allow otherwise competing activities and interests (like TV, sports, music, shopping) to have complementary aspects.

Develop new curricula

Dramatically improve textbooks *and* identify alternative resources.

Link formal and informal education

Promote stronger ties between formal and informal educational programs.

Use heroes

Use models, mentors, and heroes to promote environmental education.

Involve minority educators

Increase participation and networking of *minority* educators.

Create mentorship program, "Pathways to the Environment"

Develop a program which provides children with direct access to natural environment areas in order to help them feel their connections with nature.

Teach ecological consciousness

Begin to teach people to be altruistic, caring, and environmentally conscious as early as possible. Do this by reaching out to children in *pre-K settings* (via television, neighborhood organizations, etc.) before they go to elementary school.

Reflect on world view

Stimulate self-reflection among environmental educators concerning our present world view and where it has taken the earth and *all* its inhabitants.

Increase ecological literacy

Increase environmental educators' literacy about issues pertinent to historical, cultural, and philosophical issues. They should review gender-specific and cultural literature to understand our connections to nature.

Encourage diversity

Encourage effective dialogue among all cultures and races regarding environmental problems and, in the process, learn to understand and appreciate our differences. Recognize and work with cultural diversity, including senior citizens, an untapped resource.

Teach global thinking

Develop a global understanding by introducing quality geography experiences. Promote geographic literacy.

Use environmental crises
Use environmental crises to promote positive responses to our natural world.

Educate the public
Educate the general public on threats to humanity. Make learning and environmental education ongoing and life-long.

Use the political arena
Use the political arena to foster environmental action and the use of new resources.

Develop an ecologically sound economy
Develop a healthy relationship between ecology, economy, and political systems.

Create coalitions with business and industry
Environmental educators need to form coalitions with business and industry and should use them to encourage passage of environmental education mandates.

Develop environmental leadership
Build and influence environmental leadership at local, state, and federal levels.

Improve communication
Improve communication between educational institutions, government, and corporations to enhance environmental education experiences and increase access to the natural world. This can be done on a local, state, national and international scale.

Reward work in natural history
Institutions, teachers, programs, and *children* should be recognized and rewarded for their work in environmental/nature studies. Our structures should reinforce and validate this work.

Give the "Barrier Buster" award
Identify and *use* model individuals and programs.

Identify and disseminate model programs
Identify and disseminate already existing models for natural history education.

Establish community advisory committees
Promote training and assistance for establishing local Community Advisory Committees for Environmental Education.

"Margaret Mead taught us a long time ago that the most powerful way to teach is cross-generational. Magic happens when seniors work with kids. Mentorship is critical."

William F. Hammond

Examine demographics and open spaces
Establish zoning and development guidelines which create open space. Also, acquire land to ensure access and to foster restoration and preservation. Use both the pristine "natural environment" to teach children about nature, *and* make use of non-traditional land resources close to where children live, such as vacant lots, roof-tops, and managed plots of ground.

Create opportunities for nature observation
Create individual and small group nature observation opportunities by working through schools, nature centers and community organizations.

Disseminate information
Develop a means for ensuring accuracy and responsibility in print and electronic media. Take an active role in getting more "environmental education" programs and information into all media.

Celebrate change
Create a system to support and sustain change.

Celebrate nature
Special events and festivals should celebrate nature.

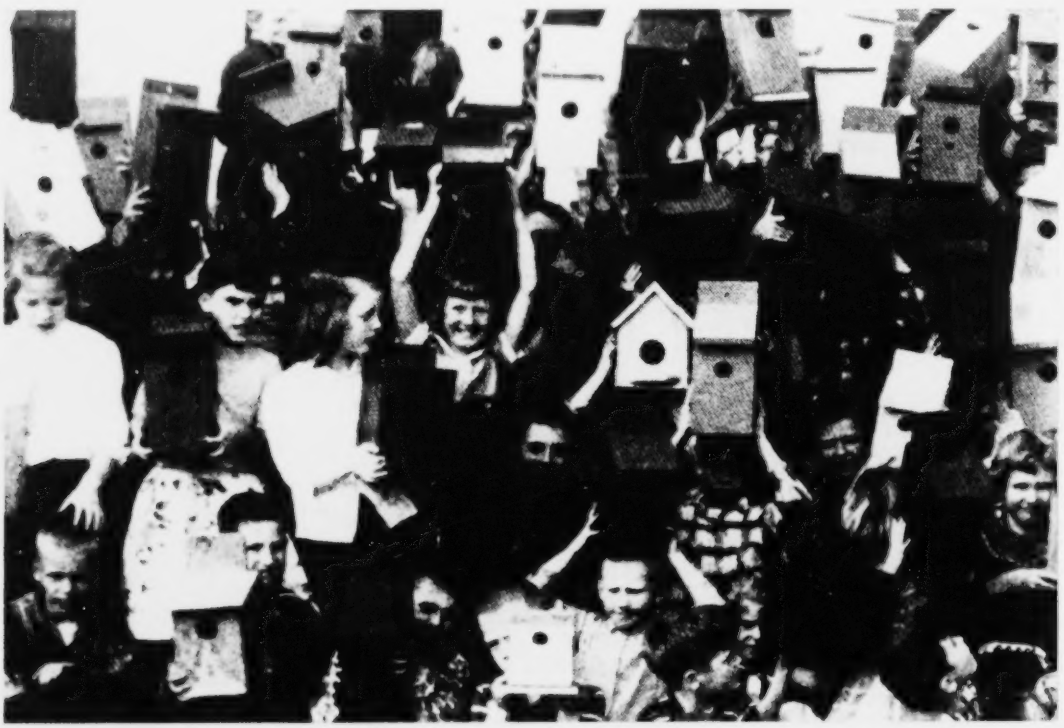
Do it now with what we have
Existing resources and knowledge need to be marketed and distributed. Environmental educators should go to schools with packaged classroom nature workshop programs. They should start now; they cannot wait for mandates to be passed. Recognize the scope of problems, but only take on realistic, manageable projects. Do not let the size of problems justify individual inaction.

WE SHARE VISION AND PASSION

Let us respond with action and commitment

As the participants met on the last night of the forum, there was an atmosphere of comraderie, dedication to our visions, and passion for the wonders and experiences of opening the natural world to children. We listened as Roger Tory Peterson described his career and realized the continuity of teaching and sponsorship represented in his work. We applauded William Hammond for his excitement and success. And we laughed with Professor Avian Guano, Bir.D., (in real life, Denny Olson) as he demonstrated the fun which we must keep in all our endeavors.

Breaking the Barriers: Linking Children and Nature was an opportunity to link ourselves with each other and to develop shared plans of action for the future. The participants felt that having created these strategies, we must assume responsibility for them. *We* are the leaders, it is up to *us* to take action, and soon. We do not have time to wait for our political, economic, and educational structures to change and act for us. We must form our own coalitions for creating change, while *also* working with other institutions to change them.



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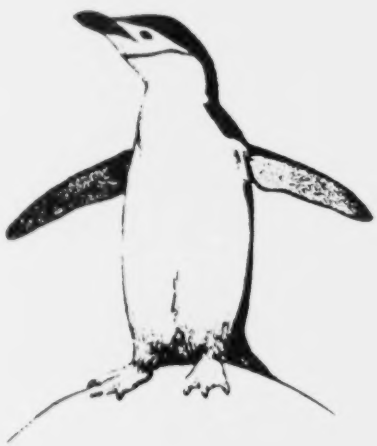

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